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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,740	06/14/2005	Rudolf Hauke	P70585US0	7316
136	7590	06/06/2007	EXAMINER	
JACOBSON HOLMAN PLLC			LE, THIEN MINH	
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SUITE 600			ART UNIT	PAPER NUMBER
WASHINGTON, DC 20004			2876	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,740	HAUKE ET AL.	
	Examiner	Art Unit	
	Thien M. Le	2876	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-22,32-39 is/are rejected.
- 7) Claim(s) 23-31 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 14 June 2005 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/2006.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

The information disclosure statement filed on 12/11/2006 has been entered. The priority document filed on 6/14/2005 has been entered. The preliminary amendment filed on 6/14/2005 has been entered. Claims 1-39 are presented for examination.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 6-7, and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Shapiro et al. (Shapiro et al. – 2003/0021450; herein after referred to as Shapiro).

Regarding claim 1, 6-7, 9-14, Shapiro discloses a fingerprint imaging device comprising: (i) an optical detector 535 (fig. 5); (ii) a light path as shown in figure 5; (iii) a mirror 530. The following quotes that are relied upon are herein provided for further reviews:

(6) The fingerprint scanner 20 includes a radiation source 52 that emits the beam 38 of electro-magnetic radiation. The radiation source that is presently preferred to minimize the cost of the fingerprint scanner 20 is a laser diode that emits electro-magnetic radiation at wavelengths between 630 and 780 nanometers, and at a power between 1 and 5 milliwatts. Devices other than a laser diode that lack the precise characteristics described above may be used for the radiation source 52 so long as such alternative device can be focused to a correspondingly small spot size, e.g. 100 microns, over the entire scanned surface 28, and so long as the index of refraction of the material of the block 34 and the wavelengths of the electro-magnetic radiation emitted from the device frustrate total internal reflection of the electro-magnetic radiation at the ridges of a fingerprint contacting the scanned surface 28. Similarly, the wavelength of electro-magnetic radiation emitted from the radiation source 52 need not be monochromatic. Rather, a radiation source used in the fingerprint scanner 20 instead of the presently preferred laser diode may emit radiation across a spectrum of wavelengths such as the entire visible spectrum of light.

[0023] Referring to FIG. 5, in one implementation, a fingerprint imaging device 500 that produces a negative image, that is, a light fingerprint image on a dark background (similar in operation to the device 300 of FIGS. 3 and 4) includes an optical plate 505 having a surface 507 exposed to air and designed to receive a finger, one or more light sources 510 located along a lateral surface of the optical plate 505, and an imaging system 512. The fingerprint imaging device 500 produces a fingerprint pattern formed by regions of contact of finger skin ridges with the surface 507 of the optical plate 505. The imaging system 512 includes an aperture 515 located at another lateral surface, an objective 520, a reflective surface 530, such as a mirror, and some type of detector 535 for receiving light collected from the aperture 515 and the objective 520. The objective 520 is positioned to focus the reflected and/or diffused light rays from the surface 507 on the detector 535. The optical plate 505 also includes a reflective surface 540 such as a converging mirror positioned on another lateral surface of the optical plate 505 and opposite to the aperture 515.

[0025] The reflective surface 530 may be any mirror coated to reflect light of a wavelength produced by the one or more light sources 510. The detector 535 may be, for example, a single crystal CMOS image sensor, produced by Motorola Co., Inc, or it may be a conventional array CCD. The optical plate 505, light sources 510, and detector 535 are chosen based on their various optical properties to provide the information needed to obtain fingerprint imaging results. Thus, for example, the optical plate 505 is selected based on its index of refraction and spectral transmission properties. The light sources 510 are selected based on their spectral emission and intensity properties. The detector 535 is selected based on its spectral detection, radiation intensity, and radiation sensitivity properties.

Art Unit: 2876

[0035] Referring also to FIG. 6, a fingerprint imaging device 600 is designed in many respects like the device 500. The device 600 has an optical plate 605 having a surface 607, one or more light sources 610 located along a lateral surface of the optical plate 605, and an imaging system 612. The imaging system 612 includes an aperture 615 located at another lateral surface of the optical plate 605, an objective 620, a reflective surface 630 such as a mirror, and a detector 635. The optical plate 605 also includes a reflective surface 640 positioned on another lateral surface of the optical plate 605 and opposite to the aperture 615. Unlike the optical plate 505, the reflective surface 640 may be a diverging mirror.

Claims 1, 6-15, 17-22, are rejected under 35 U.S.C. 102(b) as being anticipated by Neukerman et al. (Neukerman et al. – 6,122,394; herein after referred to as Neukerman).

Regarding claim 1, Neukerman discloses a fingerprint imaging device comprising: (i) an optical detector 142 (fig. 6a); (ii) a light path as shown in figure 6a; (iii) a scanning mirror 54'. The following quotes that are relied upon are herein provided for further reviews:

(33) FIGS. 6a and 6b depict a preferred arrangement for the optical elements included in the fingerprint scanner 20 as illustrated in FIGS. 2a and 2b. Those elements depicted in FIGS. 6a and 6b that are common to the fingerprint scanner 20 depicted in FIGS. 2a and 2b carry the same reference numeral distinguished by a prime ("') designation. The optical elements depicted in FIGS. 6a and 6b differ from those depicted in FIGS. 2a and 2b in the following ways. First, the preferred arrangement repositions the beam-focusing lens 122' along the beam 38' to interpose it between the radiation source 52' and the micromachined scanner 54' rather than between the micromachined scanner 54' and the radiation inlet-face 36' of the block 34'. Second, the preferred arrangement omits the mirror 124 that in the illustration of FIGS. 2a and 2b is located immediately adjacent to the block 34. Lastly, the radiation detector 142' is moved away from the radiation outlet-face 42' and a light collection lens 322 interposed between the radiation outlet-face 42' and the radiation detector 142'. The light collection lens 322 is designed to image the mirror plate 56' of the micromachined scanner 54' onto the radiation detector 142'.

(34) FIGS. 7a and 7b depict an alternative arrangement for the optical elements included in the fingerprint scanner 20 as illustrated in FIGS. 4a and 4b. Those elements depicted in FIGS. 7a and 7b that are common to the fingerprint scanner 20 depicted in FIGS. 4a and 4b carry the same reference numeral distinguished by a double prime ("") designation. The optical elements depicted in FIGS. 7a and 7b differ from those depicted in FIGS. 4a and 4b in the following ways. First, similar to FIGS. 6a and 6b the preferred arrangement repositions the beam-focusing lens 122" along the beam 38" to interpose it between the radiation source 52" and the micromachined scanner 54" rather than between the micromachined scanner 54" and the radiation inlet-face 36" of the block 34". Second, the preferred arrangement repositions the 1D micromachined scanner 212" closer to the 1D micromachined scanner 202". Re-positioning of the 1D micromachined scanner 212" closer to the 1D micromachined scanner 202" permits using a

Art Unit: 2876

much smaller 1D micromachined scanner 212" for deflecting the beam 38" parallel to the X-axis 134".

Regarding claim 6, the claimed limitations are embraced by the functions of the scanning mirror as taught by Neukerman.

Regarding claims 7-15, 17-22, see figures 6a, 6b, 7a, and 7b of Neukerman.

Claims 32-39, are rejected under 35 U.S.C. 102(b) as being anticipated by Fujii (Fujii – 2001/0031075).

Regarding claims 32-39, Fujii discloses the method for obtaining fingerprint comprising the steps of: (i) obtaining partial images of the fingerprint; (ii) combining the overlapping fingerprint images to form a composite fingerprint. See the descriptions of figures 1, 2, 10, 11, and 17-19. The following paragraphs are also relied on that are herein provided for further reviews:

[0012] Therefore, in order to produce registration fingerprint data, typically it is a conventional practice to pick up a fingerprint image of the same fingertip several times and select one of the resulting fingerprint images on which the fingerprint looks most clearly or to pick up a fingerprint pattern separately for a plurality of divisional portions to obtain a plurality of partial fingerprint images and overlap the partial fingerprint images with each other to produce a fingerprint image on which the fingerprint pattern is exhibited fully over a wide range. Also it is a conventional practice to pick up a fingerprint image of the same fingertip several times, clip, from each of the picked up fingerprint images, a region in which the fingerprint looks clearly and combine the regions clipped from the fingerprint images to produce a fingerprint image of the entire fingerprint.

[0114] Now, the principle of fingerprint data synthesis of the present embodiment is described with reference to FIGS. 3 to 5.

[0115] An example of a fingerprint image having a partially collapsed ridge structure is shown in FIG. 3. If a large amount of adhesion between ridges is produced, for example, by sweat, then a net-like ridge structure which includes a large number of false minutiae is detected as seen in an area AR1 of FIG. 3. Production of registration fingerprint data which includes such false minutiae apparently disables normal fingerprint verification.

[0116] It is assumed that such a fingerprint image as shown, for example, in FIG. 4 is obtained separately as a fingerprint image of the same fingertip. Also the fingerprint image of FIG. 4 includes a partially destroyed ridge structure similarly to the fingerprint image of FIG. 3 and cannot be used for production of correct fingerprint data. However, if a portion of the fingerprint image shown in FIG. 3 at which the ridge structure is extracted correctly and a portion of the

Art Unit: 2876

fingerprint image shown in FIG. 4 at which the ridge structure is extracted correctly are combined to each other, then such a synthetic fingerprint image which includes only correct minutiae as shown in FIG. 5 can be produced. Further, by synthesizing fingerprint data in a similar manner, fingerprint data which include minutia data over a wide range can be obtained.

[0117] In the prior art, in order to synthesize fingerprint data, fingerprint images are synthesized as they are to produce a single fingerprint image first, and then fingerprint data is produced from the single synthesized fingerprint image.

[0118] In contrast, according to the present invention, fingerprint images are used to produce fingerprint data first, and then the fingerprint data are synthesized to produce synthetic fingerprint data which includes a few false minutiae data and includes minutia data over a wide range.

[0119] Further, in the present invention, it is validated whether or not the synthetic fingerprint data produced in such a manner as described above are valid to secure the reliability as synthetic fingerprint data (registration fingerprint data).

[0120] Now, a scheme for validating synthetic fingerprint data in the present embodiment is described with reference to FIGS. 6A, 6B, 7A, 7B, 8, 9 and 34. The figures just mentioned illustrate distribution conditions of minutiae included in synthetic fingerprint data in a fingerprint inputting region 100 of the fingerprint scanner 2, that is, a fingerprint pickup face with which a fingertip is to be contacted.

[0121] First, the validity of an existing region (range of presence) of minutiae in synthetic fingerprint data is described with reference to FIGS. 6A and 6B.

[0122] If all minutiae are present within a region F of the fingerprint inputting region 100 in which a fingertip is usually pressed as seen in FIG. 6A, then it can be determined that the synthesis result is valid.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro et al. (Shapiro et al. – 2003/0021450; herein after referred to as Shapiro) in view of Haddad (Haddad – 2004/0041998).

Regarding claims 2-4 see the discussions regarding claim 1. The claims differ in reciting a mirror having a curved, bent, u-shaped, half-ring, ring, or conical shapes. However, this claimed limitation is not new. Reference to Haddad is cited as evidence showing the conventionality of curved, conical or arc-like circular mirror in a fingerprint detection apparatus. It would have been obvious to incorporate the mirror having the curved shape in the manner as taught by Haddad in place of the mirror as taught by Shapiro. The modification is merely a design consideration that is well within the skilled levels and expectations of an ordinary skilled artisan.

Claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Neukerman et al. (Neukerman et al. – 6,122,394; herein after referred to as Neukerman).

Regarding claim 16, see the discussions regarding claim 1. The claim differs in calling for a rectangular front lens. It is noted that Neukerman discloses the use of a lens for focusing the reflecting beams to the photodetector as shown in figures 6a and

6b. It would have been obvious to replace the lens as taught by Neukerman with the rectangular lens in the manner as recited in this claim. The modification is merely replace a lens with another that is well within the skilled levels and expectations of an ordinary skilled artisan.

Allowable Subject Matter

Claims 23-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to disclose a finger print detection device having the limitations of claim 1 and further comprising: (i) a collection arrangement having a an optical active detector, a recording body region, and a spreading device having the functions and characteristics as recited in claim 23.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien M. Le whose telephone number is (571) 272-2396. The examiner can normally be reached on Monday - Friday from 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee can be reached on (571) 272-2398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



/Thien M. Le/
Primary Examiner
Art Unit 2876
May 23, 2007